**3GPP TSG-SA5 Meeting #139-e *S5-215174rev1***

**e-meeting, 11 - 20 October 2021**

**Source: CATT**

**Title: pCR Rapporteur's clean-up**

**Document for: Approval**

**Agenda Item: 7.5.3**

# 1 Decision/action requested

***The group is asked to discuss and agree on the proposal.***

# 2 References

[1] 3GPP TR 32.846: “Study on charging aspects of Proximity-based Services in 5GS”.

# 3 Rationale

This pCR is to solve the editor’s note and make other editorial improvements.

# 4 Detailed proposal

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| **1st Modified Section** |

### 6.1.2 Potential charging requirements

The following are potential high-level charging requirements for ProSe services in 5GS, derived from the requirements in TS 22.115 [9], and TS 23.303 [8].

**REQ-CH\_PROSE\_5GS\_DD-01:** The 5GS should support converged charging and charging information reporting for ProSe Discovery including:

- ProSe open Direct Discovery Model A;

- ProSe restricted Direct Discovery Model A and Model B;

- ProSe open and restricted Direct Discovery for Announce;

- ProSe open and restricted Direct Discovery for Monitor;

- ProSe open and restricted Direct Discovery for Match;

- ProSe Direct Discovery over NR PC5, including UE-to-Network Relay.

**REQ-CH\_ PROSE \_5GS\_DD -02**: The 5GS should support identifying chargeable events and collecting charging information from UE.

**REQ-CH\_ PROSE \_5GS\_DD -03**: The 5GS should support identifying chargeable events and collecting charging information via 5G ProSe service.

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6.1.4.1.3.2-b Message flows for ProSe Direct Discovery Reporting – CEF

The message flows could re-use the CEF subscription/notification procedure and Charging Data Request procedure as described in 6.1.4.1.3.2-a.

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### 6.2.1 General description and assumptions

5G ProSe Direct Communication is defined as a communication between two or more UEs in proximity that are ProSe-enabled, by means of user plane transmission using NR technology via a path not traversing any network node.

5G ProSe Direct Communication over NR based PC5 reference point supports broadcast mode, groupcast mode, and unicast mode. Each communication mode is supported when the UE is served by NR and when the UE is outside of NR coverage.

5G ProSe Direct Communication supports both the case of public safety and commercial service.

5G ProSe Direct Communication supports both event based and session based charging;

To perform ProSe direct communication over PC5 reference point, the UE is configured with the related information as described in TS 23.304 [11] clause 5.1.3. The procedures for service authorization and provisioning to UE may be initiated by the PCF, by the UE, or by the AF, as defined in TS 23.304 [11] clause 6.2, the parameters could be provided/updated by ProSe Application Server or PCF, provisioned in the ME or configured in the UICC.

The 5GS could re-use the Service authorization and provisioning mechanism, and the UE could be configured with information to be included in the usage information report.

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##### 6.2.4.1.1 Consideration for ProSe unicast mode of Direct Communication charging

This reporting is achieved by sending Charging Data Request to the CHF from the ProSe related CTF or CEF.

When the CTF (AMC) in the UE decides that reporting criteria are met and the UE have network connection, the CTF (AMC) sends the collected usage information to the CTF (ADF).

When the CTF (ADF) receives usage information from the CTF (AMC) it triggers a charging data request for the unicast (one-to-one) mode communication over PC3ch.

The CTF(ADF) goes through the reported usage information, and if it contains valid ProSe Direct Communication usage data for the unicast mode communication, then sends the events directly to the CHF or through a CEF.

The CHF may then, triggers the generation of the CDR for the unicast mode communication.

The 5GS may collect the charging information for ProSe Direct communication from following table:

Table 6.2.4.1.1-1: Structure of the ProSe direct communication charging Information

| Information Element | Description |
| --- | --- |
| User Location Information | The location of the UE |
| UE identity | The identity of the ProSe UE |
| Serving PLMN ID | PLMN identity of the PLMN which signalled the carrier frequency |
| ProSe Target Layer-2 ID | The identifier of target UE, uniquely represents a specific one-to-one one-to-many, or relay discovery/communication |
| Coverage Info | This IE provides information on the coverage status (i.e., whether the UE is served by NG-RAN or not) and the time when the coverage status changed to its current state. |
| Radio Resources indicator | This IE identifies whether the operator-provided radio resources or the configured radio resources were used for ProSe direct discovery/communication |
| Usage Data Container | This field holds the container associated to a trigger conditions (e.g. go out of coverage, come back to coverage, etc.) on a specific ProSe communication |

Editor's note: Whether other information elements are needed is FFS.

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##### 6.2.4.1.2 Architecture Description

Trigger conditions are defined for the CTF or CEF to invoke a Charging Data Request [Event] towards the CHF.

The converged charging architecture is proposed for the event based charging for 5GS ProSe under the alternatives：

- Charging Trigger Function (CTF) based, as depicted in figure 6.2.4.1.2-1.

- Charging Enablement Function (CEF) based, depicted in figure 6.2.4.1.2-2.



Figure 6.2.4.1.2-1: ProSe converged charging architecture (CTF)



Figure 6.2.4.1.2-2: ProSe converged charging architecture (CEF)

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